

Unit 2- Edexcel Maths (Algebra Revision)

Topics: collecting like terms, substitution

Simplify

a) $3a - 9b - a + 5b$

b) $9j + k - 2m - 5j + 7 - 3m$

Melissa, Mason and Zach are judges in a talent competition.

For the first performer; Melissa gave a score of x points.

Mason gave three times as many points as Melissa.

Zach gave 10 points less than Mason.

Write down an expression in terms of x for the total points scored by the first performer.

Work out the value of each of these expressions when $p = 5$ and $q = -2$.

a) $p + q$

b) $p - q$

c) $3q^2$

d) $10 - q^3$

Work out the value of each of these expressions when $x = 4$ and $y = -3$ and $z = -1$.

a) $5xy - yz$

b) $4xy^2$

c) $6x^2yz^3$

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Topics: using the index laws

Simplify

a) $g^3 \times g^2$

b) $3q^3 \times 2q^5$

c) $4x^5y^2 \times x^3y^2$

Simplify

a) $\frac{c^9}{c^3}$

b) $\frac{35h^{10}}{7h^4}$

c) $\frac{4c^4 \times 9c^3}{12c^5}$

Simplify

a) $(x^3)^2$

b) $(10x^6)^3$

c) $\left(\frac{y^3}{4}\right)^2$

Simplify

a) $(3xy^4)^3$

b) $\left(\frac{2z^3b^5}{3zb^4}\right)^3$

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Topics: fractional and negative powers, n th term of a sequence

Simplify

a) z^{-2}

b) $(b^3)^{-5}$

c) $(x^5)^0$

Simplify

a) $(x^8)^{\frac{1}{2}}$

b) $(27y)^{\frac{-1}{3}}$

Here are the first four terms of an arithmetic sequence 6, 10, 14, 18

Write down, in terms of n , an expression for the n th term of this arithmetic sequence.

Here are the first five terms of an arithmetic sequence.

2 9 16 23 30

Write down, in terms of n , an expression for the n th term of this sequence.

Joanna says that 344 is a term in this sequence. Is Joanna right or wrong? You must fully explain your answer.

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Topics: Expanding brackets, factorising

Expand

a) $3(2x + 1)$

b) $x(x - 1)$

c) $-2x(x - 2)$

Expand and simplify

a) $3(x + 2) + 4(x - 1)$

b) $3y(y - 5) - 2y(y - 2)$

Factorise fully

a) $10y + 25$

b) $16x - 24$

c) $s^2 - st$

Factorise fully

a) $3x(x + 1) + 6x(x + 2)$

b) $30x^2 - 50xy$

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Topics: Expanding and simplifying brackets

Expand and simplify the following brackets

a) $(x + 4)(x + 5)$

b) $(x + 3)(x - 2)$

Expand and simplify the following brackets

a) $(x - 5)(x - 6)$

b) $(x + 4)^2$

Expand and simplify the following brackets

$$(4x + 5)(x - 2)$$

Expand and simplify the following brackets

$$(2x - 5)^2$$

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Topics: Factorising quadratic expressions

Factorise and solve

$$x^2 + 6x + 5 = 0$$

Factorise and solve

$$x^2 + 5x - 24 = 0$$

Factorise and solve

$$x^2 - 18x + 81 = 0$$

Factorise

$$x^2 - x - 20 = 0$$

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Topics: Factorising quadratic expressions

Use the difference of two squares to factorise

a) $x^2 - 16$

b) $x^2 - 121$

c) $25 - x^2$

Complete the following

$$2x^2 + 5x + 2 \\ = (2x + 1)(\dots\dots\dots)$$

Complete the following

$$6x^2 + 5x - 4 \\ = (3x + 4)(\dots\dots\dots)$$

Factorise

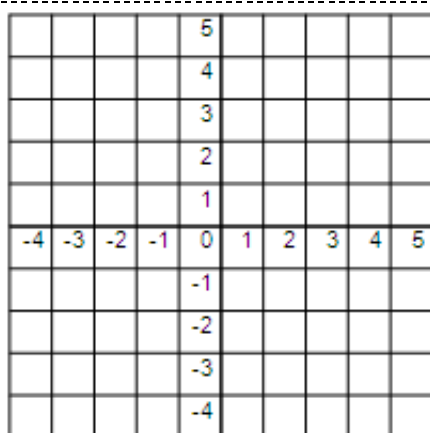
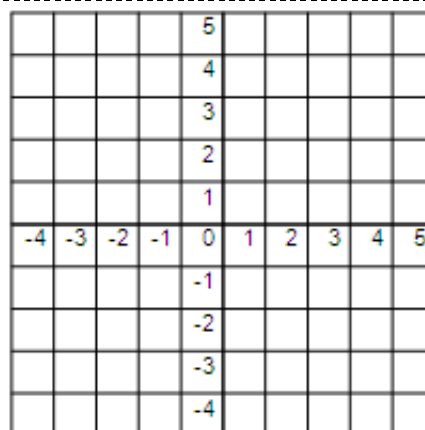
$$5x^2 + 31x + 6$$

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Topics: drawing straight line graphs

Draw and label lines with equations:

- a $x = 4$
- b $x = -2$
- c $y = 3$
- d $y = 0$.



Complete the table of values for $y = x + 2$

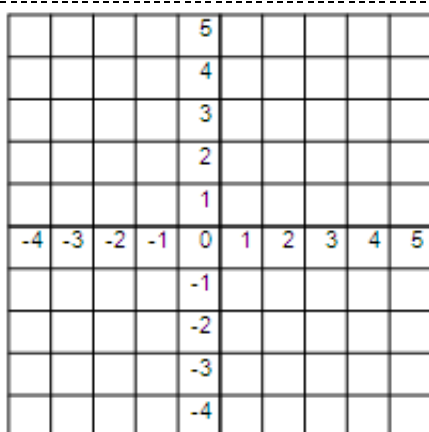
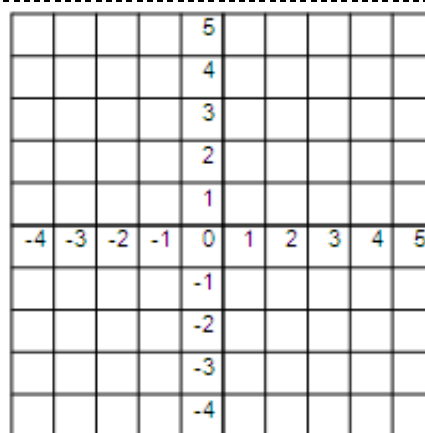
x	0	1	2	3	4	5
y		3		5		

Draw the graph of $y = x + 2$

Complete the table of values for $y = 3x + 1$

x	-2	-1	0	1	2
y	-5			4	

Draw the graph of $y = 3x + 1$



Sketch the graphs of

a) $y = x$

b) $y = -x$

Unit 2- Edexcel Maths (Algebra Revision)

Topics: calculate midpoint, finding gradient

Point A is (2, 3).

Point B is (6, 9).

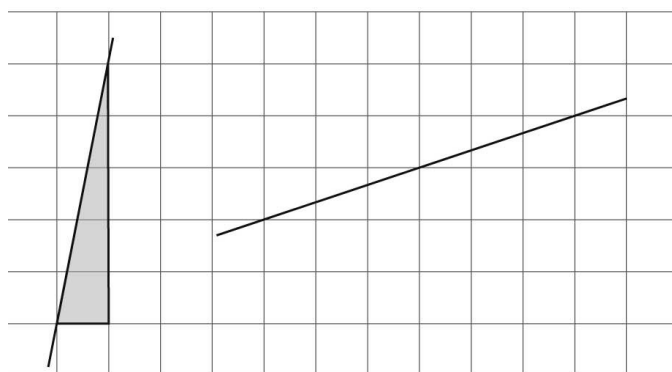
The coordinates of the midpoint of AB are

Point D is (-4, 2).

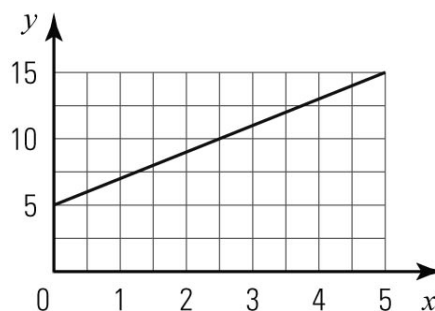
Point E is (0, 8).

The coordinates of the midpoint of DE are

Work out the gradient of each line

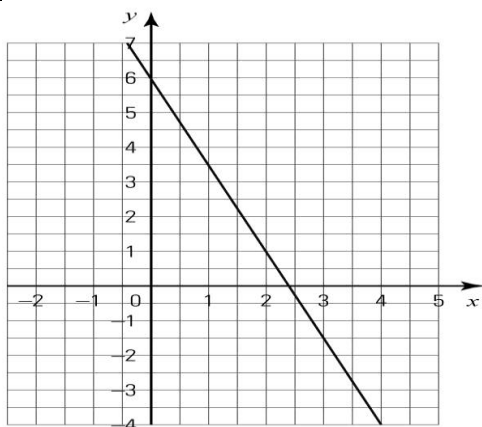


Work out the gradient of each line and y intercept



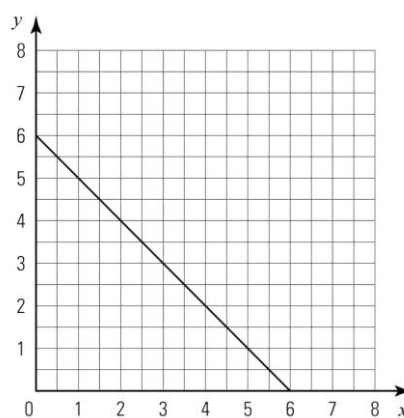
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Topics: straight line graphs



Find the equation of this line.

Find the equation of this line.



Write down the gradient and y-intercept of the lines with equations

$$y = 4x + 7$$

Write down the equation of the line that has gradient 3 and y-intercept -10.

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Topics: Parallel and perpendicular lines

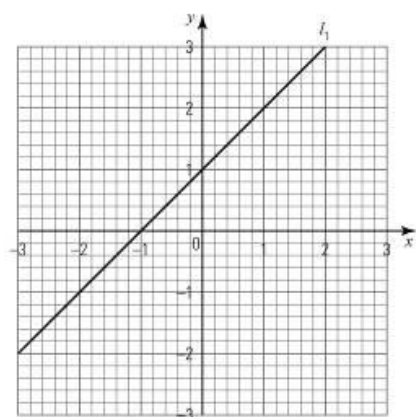
<i>a</i>	$y = 2x + 3$	$y = 2x + 5$
<i>b</i>	$y = -5x + 2$	
<i>c</i>	$y = \frac{1}{3}x + 5$	
<i>d</i>	$y = x - 6$	
<i>e</i>	$y = 3 - 2x$	

In the table, in each case, write down the equation of any line parallel to the line whose equation is given.

The first one is done for you.

In the table, in each case, write down the equation of any line perpendicular to the line whose equation is given.

<i>a</i>	$y = 3x - 1$	
<i>b</i>	$y = -2x + 7$	
<i>c</i>	$y = \frac{1}{4}x - 5$	
<i>d</i>	$y = \frac{1}{10}x + 1$	
<i>e</i>	$y = 4 - x$	

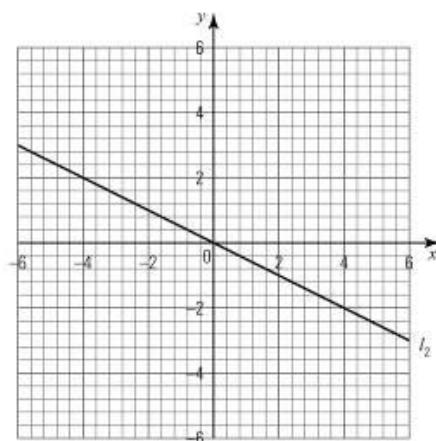


The gradient of the line is 1.

On the grid, draw two more lines which have gradient 1.

The gradient of the line l_2 is $-\frac{1}{2}$.

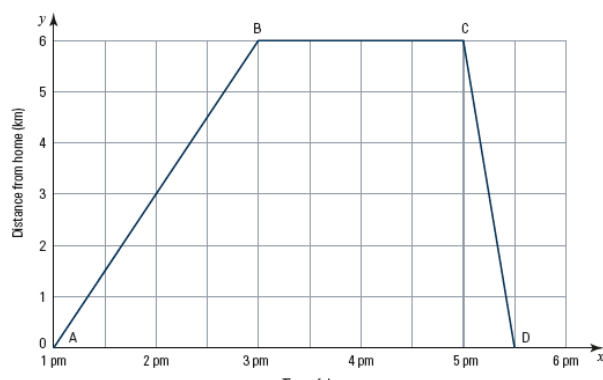
On the grid, draw two more lines which have gradient $-\frac{1}{2}$.



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Topics: real life graph

Amanda went for a walk to her friend's home. She caught the bus back home.
The distance-time graph shows this.



Which section of the graph represents

Amanda walking to her friend's house?

The time Amanda spent at her friend's house?

The bus journey back home?

Amanda spent
..... minutes
at her friend's house.

a)

a) The distance Amanda had to walk to her friend's house was km.

b)

b) The time taken for Amanda to walk to her friend's house was hours.

c)

c) Amanda's walking speed between her house and her friend's house was km/h.

The speed of the bus on
the journey home was
..... km/h.

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Topics: compound measures

A car travels 220 miles and uses 40 litres of petrol. Work out the average fuel consumption of the car.

Karen drives to Manchester, a distance of 210 km, in three and a half hours.

Calculate her average speed for the journey.

A production line in a factory produces 480 units in an eight-hour shift.

Calculate the average rate of production, giving your answer in units/hr.

Luki estimates that on a long journey he can cycle at an average speed of 30 km/hr.

How long should Luki allow to complete a journey of 260 km?

Unit 2- Edexcel Maths (Algebra Revision)

Topics: Distinguishing between 'equation', 'formula', 'identity' and 'expression'. Using substitution

Write down whether each of the following is an *expression* or an *equation* or an *identity* or a *formula*.

a $4y^2 + 2y = 10$

b $A = \pi r^2$

c $3 + 2b + 3b^2$

d $5(x - 2) = 5x - 10$

$$u = v - at$$

Work out the value of u when

$$v = 8, a = -5 \text{ and } t = 4.$$

The cost, in £, of hiring a car is given by the formula

$$\text{cost} = \text{number of days hire} \times 45 + 60$$

Use this formula to work out

a the cost of hiring a car for 14 days

b the number of days' hire when the cost is £555.

$$y = 3x^2 + 5x - 7$$

Work out the value of y when

$$x = -10.$$

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Topics:

By writing the numerator and denominator in fully factorised form, simplify

$$\frac{x^2 + x}{x^2 + 4x}$$

Simplify

$$\frac{x^2 + 6x + 5}{x^2 + 10x + 9}$$

Simplify

$$\frac{1}{2x} - \frac{1}{7x}$$

Write $\frac{4}{x+1} - \frac{3}{x^2+x}$
as a single fraction.